

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

83113
UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

I N S E C T P E S T S U R V E Y

SPECIAL SUPPLEMENT (1946, No. 5)

Issued August 1, 1946

REPORT UPON COOPERATIVE POTATO TUBER WORM SURVEY IN 1945
AND A SUMMARY FOR THE YEARS 1942 to 1945

By W. H. White, Bureau of Entomology and Plant Quarantine, in
Cooperation with State and Experiment Station Entomologists

The 1945 Survey

The cooperative potato tuber worm survey of 1945 followed essentially the same procedure as during the preceding three years and included a systematic search for and examination of potato fields, potato storages, cull piles, packing sheds and similar situations where potatoes are handled, as well as fields of host plants other than potato such as tobacco, tomato, eggplant, pepper, and susceptible weeds. The survey activities during 1945 were conducted in Iowa and Missouri, the only two states where examinations had not been made during the preceding three years, and in some of the counties of northern California in which infestation had not been found.

The principal data obtained in Iowa and Missouri during 1945 are given opposite the names of these states in table 1. A total of 57 counties were examined in these two states, which required a total of 108 man-hours. This work involved the examination of 90 potato fields and garden plantings of potatoes, 14 tobacco fields and 4 fields of miscellaneous crops or patches of wild host plants. A list of the counties found infested by the potato tuber worm in Iowa and Missouri during 1945 is given opposite these states in table 2, and the names of the counties examined are listed in table 3.

The potato tuber worm was found in the field during 1945 and positive identification made by specialists of the Division of Insect Identification of this Bureau, in 4 counties in Iowa and in 10 counties of Missouri. In Iowa the insect was found in the field and identified in potato, tobacco, and eggplant, and in Missouri in potato, tobacco, and horsenettle.

Summary of Surveys for the Years 1942-1945, Inclusive

The cooperative potato tuber worm survey was started in 1942 and completed in 1945. During the 4-year period involved the various Federal and State cooperators made examinations in all the 48 states. Some of these examinations were made incidental to other survey activities, principally the golden nematode survey, the oriental fruit moth survey, and the survey made primarily at and in the vicinity of Ports of Entry with particular reference to a search for introduced insects.

During the 4-year period of the surveys, the potato tuber worm was found, in the field, or in storage, and positive identification made by specialists of the Division of Insect Identification of this Bureau, in the following 25 states:

Alabama	Iowa	Ohio
Arizona	Louisiana	Pennsylvania
Arkansas	Maryland	South Carolina
California	Mississippi	Tennessee
Colorado	Missouri	Texas
Delaware	Nebraska	Virginia
Florida	New Jersey	Washington
Georgia	North Carolina	Wisconsin
Indiana		

In addition, the insect was collected and identified from potatoes in storage found in two localities of Nevada that had originated outside the state.

A summary of the principal data obtained during the 4-year period of the surveys is given in table 1. It will be noted from this table that a total of 797 counties or parishes were examined in the 48 states, which required a total of 11,291 man-hours. This work involved the examination of 5,262 potato fields and garden plantings of potatoes, 1,672 potato storages, cull piles, and similar situations, 178 tobacco fields and 434 fields of miscellaneous crops or patches of wild host plants. A complete list of counties or parishes found infested by the potato tuber worm during the 4-year period of the surveys is given in table 2, and the names of the counties or parishes examined in all of the 48 states are listed in table 3.

According to the information given in Insect Pest Survey Bulletin 21, Supplement to No. 9 (Nov. 8, 1941) under the title of "Records of Distribution of the Potato Tuber Worm (*Gnorimoschema operculella* (Zell.)) in the United States," this insect had not been found in New Jersey prior to 1943 or in Delaware prior to 1944, although recorded previously from stored potatoes in the latter state. Field infestations in Texas had been recorded prior to 1943. In the instance of Pennsylvania, a heavy infestation of the potato tuber worm was found near Shippensburg, Cumberland County, during 1930, but this infestation was reported as being eradicated and the 1944 record is the first field infestation found since that date. In the State of Washington the cooperative survey during 1942 failed to reveal the presence of the insect but a single specimen was found in the field during 1944. In Iowa the potato tuber worm had been found at widely distributed points in 1918 and each year during the period 1933 to 1937, inclusive, but the 1945 record was the first occurrence recorded since the latter date. In Missouri the insect was reported as being found on tobacco in Platte County, during 1929, and the 1945 record is the first infestation reported since that date. The occurrence of the potato tuber worm in Arizona was recorded by K. B. McKinney in an article entitled "Common Insects Attacking Sugar Beets and Vegetable Crops in the Salt River Valley of Arizona," that appeared in the Journal of Economic Entomology, Vol. 32, No. 6, pp. 808-810, December 1939. This report was overlooked when compiling information for the abovementioned Insect Pest Survey Bulletin 21. In 1944 the presence of the insect in the field in Arizona was again established during the progress of this survey.

Thanks are expressed to the State authorities who participated in the survey, to the personnel of other Divisions of the Bureau who assisted in this work, and also to the specialists of the Division of Insect Identification for their painstaking work in making specific identifications of the material submitted. Appreciation is expressed to H. H. Keifer, Associate Systematic Entomologist, State of California Department of Agriculture, who furnished records of potato tuber worm occurrence in the following 10 counties of California not obtained by Federal workers: Butte, Contra Costa, Kern, Madera, Merced, San Benito, San Francisco, Sonoma, Stanislaus, and Yolo.

The attached colored map shows the following important information obtained during the cooperative potato tuber worm survey in the years 1942-1945, inclusive: (1) Counties or parishes where the insect was found in potatoes. (2) Counties or parishes where the insect was found in tobacco, other crops, or wild host plants. (3) Counties or parishes surveyed but no potato tuber worm infestation found.

1946 NOTE

Since this report was prepared, adults of the potato tuber worm were collected, during July 1946, from a potato storage cellar at Burley, Cassia County, Idaho. An adult was also collected from weeds growing near Burley. These identifications were made by specialists of the Division of Insect Identification of this Bureau. The source of these findings is reported to be potatoes which originated outside the State of Idaho. Unverified press reports state that the insect was also taken in Idaho at Caldwell, St. Anthony, and Idaho Falls, also in connection with potato shipments.

Table 1. Extent of cooperative survey on the potato tuber worm during 1942 to 1945, inclusive, and the infestations found

State	Number of Counties or parishes surveyed	Estimate: Number of Man-Hours Devoted to Survey In					Number of Counties Infested - by Plants and Locations				
		Potato fields and gardens	Potato Storage, Cull piles, et olera	Tobacco fields	Other crops and wild hosts	Total	Potato fields and gardens	Potato Storage, Cull piles, et olera	Tobacco fields	Other crops and wild hosts	Total *
Alabama	6	0	9	2	5	16	0	3	2	2	4
Arizona	10	91	0	0	45	136	4	0	0	0	4
Arkansas	40	40	0	0	0	40	1	0	0	0	1
California	25	132	1	0	71	204	14	0	0	13	A 21 B 1
Colorado	15	20	124	0	0	144	0	1	0	0	0
Connecticut	8	160	68	0	0	228	0	0	0	0	0
Delaware	3	150	83	0	0	233	2	2	0	0	2
Florida	27	94	19	40	60	213	13	4	8	8	23
Georgia	50	6	0	72	30	108	0	0	28	2	30
Idaho	44	306	89	0	0	395	0	0	0	0	0
Illinois	7	44	2	0	0	46	0	0	0	0	0
Indiana	15	98	1	0	1	100	1	0	0	0	1
Iowa	31	52	0	1	1	54	3	0	1	2	4
Kansas	11	58	0	0	2	60	0	0	0	0	0
Kentucky	6	45	7	0	0	52	0	0	0	0	0
Louisiana	29	20	472	4	5	501	0	20	1	0	20
Maine	4	370	81	0	0	651	0	0	0	0	0
Maryland	9	75	9	6	0	90	4	0	0	0	4
Massachusetts	11	161	26	0	0	187	0	0	0	0	0
Michigan	17	489	2	0	0	491	0	0	0	0	0
Minnesota	25	413	232	0	3	648	0	0	0	0	0
Mississippi	21	2	85	1	3	91	0	3	0	0	3
Missouri	26	38	0	13	3	54	3	0	9	1	10
Montana	27	44	132	0	0	176	0	0	0	0	0
Nebraska	30	207	106	1	69	383	4	0	0	1	5
Nevada	5	53	34	0	0	87	0	0	0	0	0
New Hampshire	10	68	37	0	0	105	0	0	0	0	0
New Jersey	10	596	150	0	0	746	7	0	0	0	7
New Mexico	3	12	0	0	0	12	0	0	0	0	0
New York	24	260	30	0	10	300	0	0	0	0	0
North Carolina	7	105	23	3	4	135	4	5	2	1	7
North Dakota	17	43	85	0	0	128	0	0	0	0	0
Ohio	31	269	17	4	6	296	2	0	0	0	2
Oklahoma	11	1	54	0	0	55	0	0	0	0	0
Oregon	11	139	0	0	0	139	0	0	0	0	0
Pennsylvania	19	357	30	0	0	387	1	0	0	0	1
Rhode Island	5	80	0	0	0	80	0	0	0	0	0
South Carolina	3	70	0	19	4	93	2	0	1	0	2
South Dakota	8	15	46	0	0	61	0	0	0	0	0
Tennessee	14	659	12	10	0	681	0	0	1	0	1
Texas	44	1031	21	0	16	1068	6	0	0	2	8
Utah	24	238	0	0	75	313	0	0	0	0	0
Vermont	14	95	13	0	0	108	0	0	0	0	0
Virginia	2	6	0	0	0	6	2	0	0	0	2
Washington	5	131	13	0	0	144	1	0	0	0	1
West Virginia	3	30	0	0	0	30	0	0	0	0	0
Wisconsin	49	556	30	28	2	616	25	0	5	0	26
Wyoming	19	257	122	0	21	400	0	0	0	0	0
	797	8386	2265	204	436	11291	99	38	58	32	190

* Includes instances where more than one species of host plant was found infested in individual counties.

A-Includes records of potato tuber worm occurrence in 10 counties of California furnished in October, 1945, by H. H. Kelfer, Associate Systematic Entomologist, State of California Department of Agriculture.

B-Moths found in storage in one county in 1941.

C-Specimens of potato tuber worms were found in stored potatoes at Reno and Elko, Nevada, in 1944. The infested potatoes originated outside the State of Nevada.

Table 2 - List of counties found infested by potato tuber worm during 1942-1945, inclusive

<u>Alabama</u>	Jefferson	Lee	Lincoln	<u>Wisconsin</u>
Baldwin	Lafayette	Muscataine	Otoe	Columbia
Covington	Lee	Story		Crawford
Marshall	Leon		<u>New Jersey</u>	Dane
Mobile	Liberty	<u>Louisiana</u>	Burlington	Dodge
	Madison	Acadia		Fond du Lac
<u>Arizona</u>	Manatee	Ascension	Camden	Grant
Cochise	Monroe	Assumption	Cape May	Iowa
Maricopa	Orange	East Baton Rouge	Cumberland	Jefferson
Pima	Palm Beach	Iberia	Gloucester	La Crosse
Santa Cruz	Putnam	Iberville	Ocean	Marathon
	Sarasota	Jefferson Davis	Salem	Milwaukee
<u>Arkansas</u>	St. Johns	Lafayette		Monroe
White	Suwannee	Lafourche		Oneida
	Taylor	Livingston	<u>North Carolina</u>	Outagamie
<u>California</u>		Plaquemines	Beaufort	Polk
Alameda	<u>Georgia</u>	St. James	Camden	Portage
Butte	Atkinson	St. John the	Carteret	Racine
Contra Costa	Ben Hill	Baptist	Currituck	Richland
Kern	Berrien	St. Landry	Pamlico	Rock
Los Angeles	Brantley	St. Martin	Pasquotank	Sauk
Madera	Brooks	St. Mary	Tyrrell	Shawano
Merced	Bryan	St. Tammany		Vernon
Monterey	Bulloch	Tangipahoa	<u>Ohio</u>	Walworth
Orange	Charlton	Terrebonne	Franklin	Waukesha
San Benito	Chatham	West Baton Rouge	Sandusky	Waupaca
San Diego	Clinch			Winnebago
San Francisco	Coffee	<u>Maryland</u>	<u>Pennsylvania</u>	
San Joaquin	Colquitt	Calvert	Philadelphia	
San Luis Obispo	Cook	Somerset		
Santa Barbara	Decatur	Wicomico	<u>South Carolina</u>	
Santa Clara	Echols	Worcester	Charleston	
Santa Cruz	Effingham		Horry	
Solano	Glynn	<u>Mississippi</u>		
Sonoma	Grady	Harrison	<u>Tennessee</u>	
Stanislaus	Irwin	Jackson	Montgomery	
Yolo	Lanier	Pearl River		
	Lowndes		<u>Texas</u>	
<u>Colorado</u>	McIntosh	<u>Missouri</u>	Bailey	
Montrose	Mitchell	Boone	Cameron	
	Pierce	Bollinger	Dallam	
<u>Delaware</u>	Spalding	Callaway	Deaf Smith	
Kent	Thomas	Cooper	Dimmit	
Sussex	Tift	Clay	Hale	
	Turner	Dallas	Hidalgo	
<u>Florida</u>	Ware	Howard	Lubbock	
Alachua	Worth	Lafayette		
Clay		Platte	<u>Virginia</u>	
Columbia	<u>Indiana:</u>	Pike	Northampton	
Dixie	DeKalb		Princess Anne	
Gadsden		<u>Nebraska</u>		
Gilchrist	<u>Iowa:</u>	Box Butte	<u>Washington</u>	
Hamilton	Cass	Buffalo	Yakima	
Indian River		Lancaster		

Table 3.- List of counties examined for potato tuber worm during 1942-1945, inclusive

<u>Alabama</u>	<u>Colorado</u>			
Baldwin	Alamosa	Madison	McIntosh	Nez Perce
Covington	Conejos	Manatee	Mitchell	Oneida
Dallas	Delta	Monroe	Pierce	Owyhee
Jefferson	Dolores	Orange	Rabun	Payette
Marshall	Eagle	Palm Beach	Spalding	Power
Mobile	Garfield	Putnam	Thomas	Shoshone
	La Plata	Sarasota	Tift	Teton
<u>Arizona</u>	Mesa	St. Johns	Turner	Twin Falls
Cochise	Montezuma	Suwannee	Walton	Valley
Coconino	Montrose	Taylor	Ware	Washington
Graham	Morgan		Wayne	
Greenlee	Rio Grande	<u>Georgia</u>	Wilkes	<u>Illinois</u>
Maricopa	Saguache	Atkinson	Worth	Adams
Pima	Sedgwick	Barrow		Cook
Pinal	Weld	Banks	<u>Idaho</u>	Jo Daviess
Santa Cruz	<u>Connecticut</u>	Ben Hill	Ada	Madison
Yavapai	Fairfield	Berrien	Adams	McHenry
Yuma	Hartford	Brantley	Bannock	Saint Clair
	Litchfield	Brooks	Bear Lake	Will
<u>Arkansas</u>	Middlesex	Bryan	Benewah	
Howard	New Haven	Bulloch	Bingham	<u>Indiana</u>
White	New London	Camden	Blaine	Allen
	Tolland	Charlton	Boise	DeKalb
<u>California</u>	Windham	Chatham	Bonner	Elkhart
Alameda		Cherokee	Bonneville	Fulton
Butte	<u>Delaware</u>	Clinch	Boundary	Kosciusko
Contra Costa	Kent	Coffee	Butte	Lagrange
Humboldt	New Castle	Colquitt	Camas	Lake
Kern	Sussex	Cook	Canyon	La Porte
Los Angeles		Dawson	Caribou	Marshall
Madera	<u>Florida</u>	Decatur	Cassia	Noble
Merced	Alachua	Echols	Clark	Porter
Mendocino	Broward	Effingham	Clearwater	Pulaski
Modoc	Clay	Elbert	Custer	Starke
Monterey	Columbia	Forsyth	Elmore	Steuben
Orange	Collier	Gilmer	Franklin	Saint Joseph
San Benito	Dade	Glynn	Fremont	
San Diego	Dixie	Grady	Gem	<u>Iowa</u>
San Francisco	Gadsden	Gwinnett	Gooding	Allamakee
San Joaquin	Gilchrist	Habersham	Idaho	Boone
San Luis Obispo	Hamilton	Hall	Jefferson	Benton
Santa Barbara	Indian River	Hart	Jerome	Clinton
Santa Clara	Jackson	Irwin	Kootena	Clayton
Santa Cruz	Jefferson	Jackson	Latah	Clay
Siskiyou	Lafayette	Lanier	Lemhi	Cass
Solano	Lee	Liberty	Lewis	Carrol
Sonoma	Leon	Lincoln	Lincoln	Cerro Gordo
Stanislaus	Liberty	Long	Madison	Decatur
Yolo		Lowndes	Minidoka	Dallas

Table 3.- List of counties examined for potato tuber worm during 1942-1945,
inclusive (continued)

<u>Iowa (Cont'd)</u>				
Dubuque	Iberia	Middlesex	Mississippi	Montana
Des Moines	Iberville	Norfolk	Attala	Beaverhead
Franklin	Jackson	Plymouth	Calhoun	Big Horn
Grundy	Jefferson Davis	Worcester	Coahoma	Blaine
Hamilton	Lafayette		Harrison	Carbon
Hardin	La Fourche	<u>Michigan</u>	Hinds	Cascade
Louisa	Livingston	Antrim	Holmes	Chouteau
Lee	Plaquemines	Bay	Humphreys	Custer
Marshall	Pointe Coupee	Emmet	Issaquena	Dawson
Monona	Rapides	Grand Traverse	Jackson	Deer Lodge
Muscataine	St. Charles	Houghton	Jasper	Flathead
O'Brien	St. James	Jackson	Lauderdale	Gallatin
Pottawattamie	St. John the Baptist	Kent	Leake	Hill
Plymouth	St. Landry	Lapeer	Leflore	Jefferson
Polk	St. Martin	Lenawee	Madison	Lake
Story	St. Mary	Macomb	Newton	Lewis and Clark
Sioux	St. Tammany	Marquette	Pearl River	Madison
Tama	Tangipahoa	Monroe	Sunflower	Missoula
Woodbury	Terrebonne	Montcalm	Tate	Phillips
Winneshiek	Washington	Osceola	Washington	Powell
	West Baton Rouge	Otsego	Wayne	Prairie
	West Feliciana	Presque Isle	Yelobusha	Ravalli
	Winn	Wexford		Richland
<u>Kansas</u>			<u>Missouri</u>	Roosevelt
Cowley		<u>Minnesota</u>	Boone	Rosebud
Douglas	<u>Maine</u>	Aitkin	Bollinger	Teton
Jefferson	Aroostook	Anoka	Butler	Valley
Johnson	Penobscot	Becker	Callaway	Yellowstone
Leavenworth	Piscataquis	Benton	Camden	
Reno	Waldo	Beltrami	Carroll	
Riley	<u>Maryland</u>	Chisago	Chariton	<u>Nebraska</u>
Sedgwick	Calvert	Clay	Cooper	Adams
Shawnee	Charles	Freeborn	Clay	Antelope
Sumner	Frederick	Goodhue	Dallas	Box Butte
Wyandotte	Garrett	Hennepin	Greene	Buffalo
	Montgomery	Isanti	Howell	Cass
<u>Kentucky</u>	Somerset	Itasca	Howard	Cheyenne
Christian	St. Marys	Kittson	Lafayette	Clay
Jefferson	Wicomico	Marshall	Miller	Dakota
Logan	Worcester	Mille Lacs	Platte	Dawes
Muhlenberg		Morrison	Pike	Duel
Oldham	<u>Massachusetts</u>	Norman	Pemiscot	Fillmore
Todd	Barnstable	Otter Tail	Ray	Franklin
	Berkshire	Pine	Randolph	Gage
<u>Louisiana</u>	Bristol	Polk	Saline	Garden
Acadia	Essex	Ramsey	Shannon	Hall
Ascension	Franklin	Roseau	Stoddard	Johnson
Assumption	Hampden	Stearns	St. Louis	Kimball
Avoyelles	Hampshire	Todd	Texas	Lancaster
East Baton Rouge		Wadena	Webster	Lincoln
East Feliciana				

Table 3.- List of counties examined for potato tuber worm during 1942-1945,
inclusive (continued)

<u>Nebraska (Cont'd)</u>	Chenango	<u>Ohio</u>	Marion	Cumberland
Morrill	Clinton	Ashtabula	Multnomah	Davidson
Otoe	Cortland	Brown	Polk	Fentress
Pawnee	Erie	Butler	Tillamook	Franklin
Platte	Essex	Champaign	Washington	Grundy
Richardson	Franklin	Clark	Yamhill	Montgomery
Saunders	Genesee	Clermont		Moore
Scottsbluff	Livingston	Clinton	<u>Pennsylvania</u>	Morgan
Sheridan	Madison	Columbiana	Berks	Putnam
Sioux	Monroe	Coshocton	Bucks	Robertson
Washington	Nassau	Darke	Cambria	Scott
York	Niagara	Delaware	Chester	White
	Oneida	Erie	Cumberland	
<u>Nevada</u>	Onondaga	Fayette	Dauphin	<u>Texas</u>
Elko	Orleans	Franklin	Delaware	Angelina
Humboldt	Seneca	Geauga	Erie	Austin
Lyon	Steuben	Hardin	Franklin	Atascosa
Pershing	Suffolk	Highland	Lancaster	Bailey
Washoe	Washington	Huron	Lehigh	Bexar
	Wayne	Licking	Luzerne	Bowie
<u>New Hampshire</u>	Westchester	Lorain	Montgomery	Cameron
Belknap	Wyoming	Lucas	Northampton	Camp
Carroll		Madison	Philadelphia	Castro
Cheshire	<u>North Carolina</u>	Morrow	Potter	Cherokee
Coos	Beaufort	Ottawa	Schuylkill	Colorado
Grafton	Camden	Paulding	Somerset	Comanche
Hillsboro	Carteret	Pickaway	York	Dallam
Merrimack	Currituck	Richland	<u>Rhode Island</u>	Dallas
Rockingham	Pamlico	Sandusky	Bristol	Deaf Smith
Strafford	Pasquotank	Seneca	Kent	Dimmit
Sullivan	Tyrrell	Wayne	Newport	Erath
		Wood	Providence	Fannin
<u>New Jersey</u>	<u>North Dakota</u>	<u>Oklahoma</u>	Washington	Fort Bend
Burlington	Barnes	Bryan		Franklin
Camden	Benson	Choctaw	<u>South Carolina</u>	Gillespie
Cape May	Case	Haskell	Beaufort	Gregg
Cumberland	Foster	Le Flore	Charleston	Hale
Gloucester	Griggs	McCurtain	Horry	Harris
Mercer	Grand Forks	Muskogee		Hidalgo
Middlesex	McHenry	Okfuskee	<u>South Dakota</u>	Hockley
Monmouth	Pembina	Payne	Brookings	Lamar
Ocean	Ramsey	Pottawatomie	Clark	Lavaca
Salem	Richland	Tulsa	Codington	Lubbock
	Stutsman	Wagoner	Day	Nacogdoches
<u>New Mexico</u>	Traill		Deuel	Polk
Bernalillo	Towner	<u>Oregon</u>	Grant	Red River
Sandoval	Walsh	Benton	Marshall	Rusk
Valencia	Wells	Klamath	Roberts	Shelby
	Ward	Lane		Swith
<u>New York</u>	Williams	Lincoln	<u>Tennessee</u>	Tarrant
Allegany		Linn	Cheatham	Titus
Broome			Coffee	

Table 3.- List of counties examined for potato tuber worm during 1942-1945,
inclusive (continued)

Texas Cont'd)

Travis
Upshur
Van Zandt
Wharton
Wilbarger
Wise
Wood

Utah

Beaver
Box Elder
Cache
Carbon
Davis
Emery
Garfield
Grand
Iron
Juab
Kane
Millard
Morgan
Piute
Salt Lake
San Juan
Sanpete
Sevier
Summit
Tooele
Utah
Wasatch
Washington
Weber

Vermont

Addison
Bennington
Caledonia
Chittenden
Essex
Franklin
Grand Isle
Lamoille
Orange
Orleans
Rutland
Washington
Windham
Windsor

Virginia

Northampton
Princess Anne

Washington

Benton
King
Kittitas
Pierce
Yakima

West Virginia

Preston
Randolph
Tucker

Wisconsin

Barron
Chippewa
Clark
Columbia
Crawford
Dane
Dodge
Door
Dunn
Eau Claire
Fond du Lac
Green Lake
Grant
Iowa
Jackson
Jefferson
Juneau
Kenosha
Kewaunee
La Crosse
Langlade
Manitowoc
Marathon
Marquette
Milwaukee
Monroe
Oneida
Outagamie
Ozaukee
Polk
Portage

Racine
Richland
Rock
Rusk
Sauk
Shawano
Sawyer
St. Croix
Trempealeau
Vilas
Vernon
Walworth
Washburn
Washington
Waukesha
Waupaca
Waushara
Winnebago

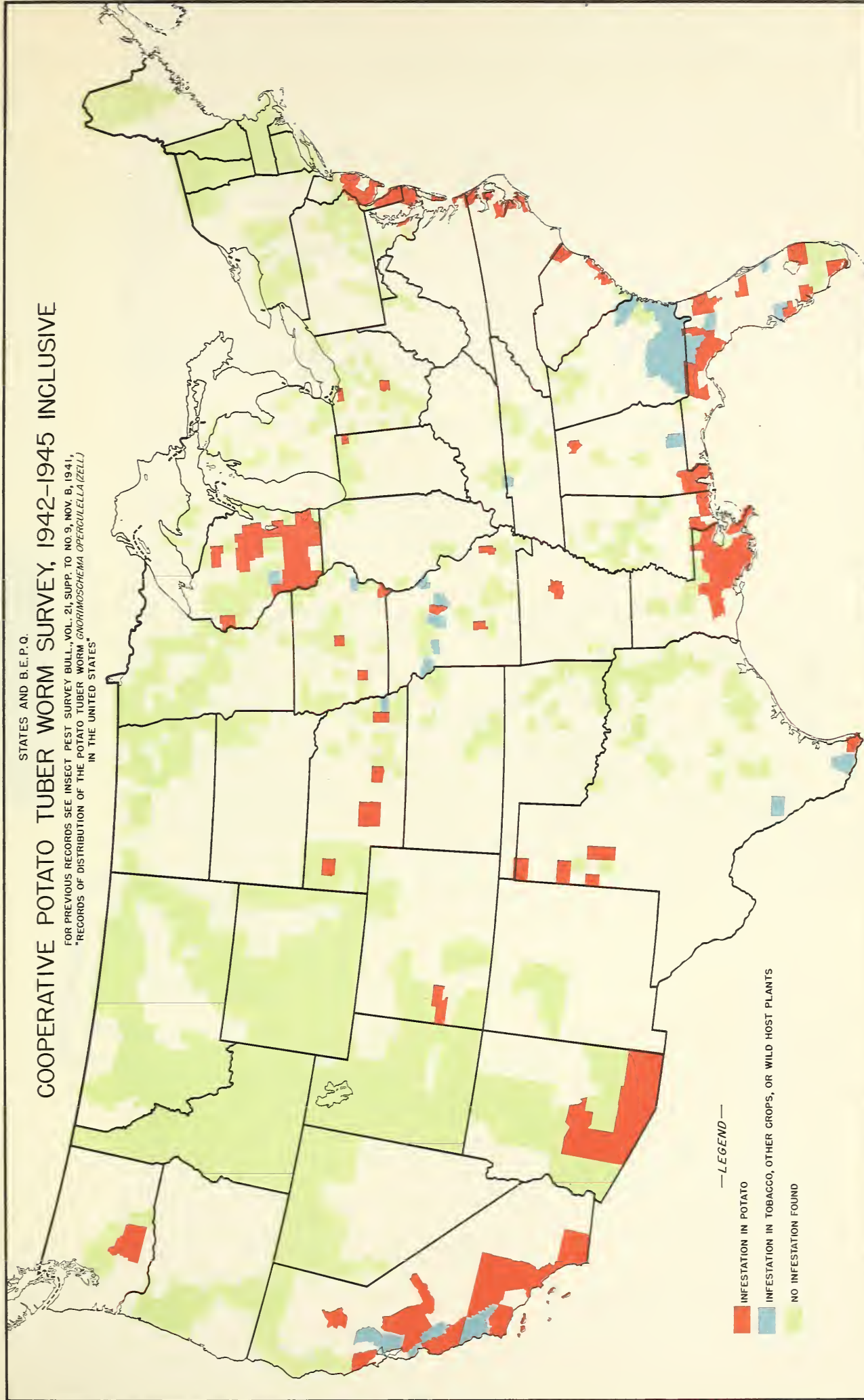
Wyoming

Albany
Big Horn
Carbon
Crook
Fremont
Goshen
Hot Springs
Laramie
Lincoln
Natrona
Niobrara
Park
Sheridan
Sublette
Sweetwater
Teton
Unita
Washakie
Weston

STATES AND B.E.P.Q.

COOPERATIVE POTATO TUBER WORM SURVEY, 1942-1945 INCLUSIVE

FOR PREVIOUS RECORDS SEE INSECT PEST SURVEY BULL., VOL. 21, SUPP. TO NO. 9, NOV. B, 1941,
 "RECORDS OF DISTRIBUTION OF THE POTATO TUBER WORM *GNORIMOSCHENA OPERCULELLAE* ZELL.
 IN THE UNITED STATES"



- LEGEND—
- INFESTATION IN POTATO
 - INFESTATION IN TOBACCO, OTHER CROPS, OR WILD HOST PLANTS
 - NO INFESTATION FOUND

LIBRARY
CURRENT SERIAL RECORD
AUG 13 1946
U. S. DEPARTMENT OF AGRICULTURE